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## Notes on Flowerpeckers (Aves, Dicaeidae)

### 1. The Genera *Melanocharis*, *Rhampho-* *charis*, and *Prionochilus*

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The family of flowerpeckers (Dicaeidae) comprises about 60 mostly fruit- and nectar-eating small passerine birds, distributed in the Oriental and Australian regions. The following notes on the classification and taxonomy of the Dicaeidae are the result of studies carried out in connection with the preparation of the section dealing with these birds in Peters' "Check-list of the birds of the world." The main part of this study is based on an examination of the excellent material in the American Museum of Natural History, and, unless otherwise stated, the specimens discussed belong to this museum. However, also the entire collections of flowerpeckers in the British Museum (Natural History), London, Naturhistoriska Riksmuseet, Stockholm, and the Zoological Museum, Copenhagen, have been examined. In addition, comparative material has been borrowed from the Chicago Natural History Museum, the Rijksmuseum van Natuurlijke Historie, Leiden, and the Zoological Museum, Berlin. Finally, smaller collections of flowerpeckers, particularly of the Philippine species, have been examined during previous visits to the United States National Museum, the Chicago Natural History Museum, the Museum of Zoology, University of Michigan, in Ann Arbor, the Carnegie Museum in Pittsburgh, and the Philippine National Museum in Manila.

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All the drawings in these notes have been carried out by my assistant, Mr. Erik Petersen, to whom I also am indebted.

The most recent review of the *Dicaeidae* was prepared by Mayr and Amadon (1947, Amer. Mus. Novitates, no. 1360, pp. 1-32). In this excellent treatise the authors have solved most problems concerning the delimitation of the family and the main classification of the genera and species, and, generally speaking, I agree with the said authors in their conclusions. However, Mayr and Amadon only exceptionally discussed the geographical variation and the synonymy, and these items, therefore, form the main theme of my notes.

As far as genera are concerned, I follow Mayr and Amadon in their classification, and it is sufficient, therefore, to refer to their review for a description of the seven acceptable genera. There are two primitive genera, *Melanocharis* and *Rhamphocharis*, both restricted to New Guinea, that are characterized by a rather simple structure of the tongue, a "booted" tarsus, and a well-developed outer (tenth) primary. The main bulk of the species is grouped within the two widely distributed genera *Prionochilus* and *Dicaeum*, which have a more specialized (tubular) tongue structure, adapted to nectar feeding, and the tarsus scutellated in front. *Prionochilus* has a comparatively large tenth primary, just as do the two preceding genera, while in the members of *Dicaeum* this feather is vestigial. In all four genera mentioned, the bill is serrated. The three remaining genera are more specialized and appear to belong to a more distant offshoot of the family. They have all a vestigial tenth primary and a bill without serration. The tongue of the fruit-eating New Guinea genera *Oreocharis* and *Para-*

*mythia*, as well as that of the insectivorous Australian *Pardalotus* is simple.

The most primitive genus is *Melanocharis*, which is a close relative of *Rhamphocharis* and, further, shows relationship to *Prionochilus*, to judge from color pattern, bill form, and size. The color patterns of the three specialized genera, *Oreocharis*, *Paramythia*, and *Pardalotus*, differ strikingly from those of the other genera, but mutually show some similarities, indicating that these birds are of common origin, as pointed out by Mayr and Amadon (1947, *loc. cit.*). It is difficult to assign a satisfactory sequence for these aberrant genera, but as *Oreocharis* obviously is related to *Paramythia* but has not reached the evolutionary level of the latter, and as *Pardalotus* differs strikingly from all other flowerpeckers in life habits, particularly in nest building, it is most natural to start with *Oreocharis* and end with *Pardalotus*, as suggested by Mayr and Amadon. The sequence of genera followed in my notes is then *Melanocharis*, *Rhamphocharis*, *Prionochilus*, *Dicaeum*, *Oreocharis*, *Paramythia*, and *Pardalotus*.

#### MELANOCHARIS SCLATER, 1858

This exclusively New Guinea group comprises five species, which were formerly distributed over four genera (*Melanocharis*, *Urocharis*, *Pristorhamphus*, and *Neneba*). Ogilvie-Grant (1915, *Ibis*, Jubilee Suppl., no. 2, pp. 83–85) united *Neneba* with *Melanocharis*, while the much less distinct *Pristorhamphus* was kept apart. Mayr (1931, *Mitt. Zool. Mus. Berlin*, vol. 17, p. 668), on the contrary, united *Melanocharis*, *Urocharis*, and *Pristorhamphus*, but maintained *Neneba*. More recently Mayr (1941, *List of New Guinea birds*, pp. 213–215) maintained three genera, resuscitating *Pristorhamphus*, but subsequently Mayr and Amadon (1947, *ibid.*, p. 13) united all five species in one genus, *Melanocharis*.

While there is no doubt that four of the species form a natural group, the relationship between them and the fifth species, *M. striativentris*, appears to be more remote. This last species is more strongly built and has a heavier bill and the under parts longitudinally streaked (they are unicolored in the other species). Also, in *M. striativentris* there is no difference in size between the sexes, while in the other species the females are larger, in some species even considerably larger, than the males. This character, which *Melanocharis* shares with *Rhamphocharis*, is almost unique among passerine birds; so far I know it is found elsewhere only in *Loboparadisea sericea*. However, *M. striativentris* agrees with the remaining species of the genus in all other

respects. It is especially noteworthy that some of its subspecies have either white tail marks or white axillaries, which are some of the main color characters in the other species within the genus. Besides, even in the genera *Prionochilus* and *Dicaeum*, some species are ventrally streaked while others are not, and the structure and form of the bill are subject to considerable variation. Accordingly, I retain *striativentris* in *Melanocharis*, but for those who want to separate it generically (or subgenerically) the name *Neneba* De Vis, 1897, is available.

There is a marked variation in the structure of the second outer primary in this genus. In *M. longicauda* the tip of this feather is strongly emarginated and notched in adult birds; in *M. nigra*, much less so; and in *M. versteri* and *M. striativentris* it is of normal shape. *Melanocharis arfakiana* has not been examined by me for this character.

The most primitive species is *M. arfakiana*, which is very similar to the females and immature individuals of the other species. *Melanocharis nigra*, *longicauda*, and *versteri* are closely related and form a series characterized by increasing tail length and the progressive development of white contrasting patches in the plumage pattern. *Melanocharis striativentris*, with its robust bill, heavily streaked under parts, and lack of sexual dimorphism in color pattern as well as in size, stands somewhat apart from the other species, as mentioned above, and is here kept at the end of the genus, although it certainly appears to be more primitive than the *M. nigra-longicauda-versteri* group.

*Melanocharis arfakiana* (Finsch), 1900

TYPE LOCALITY: Arfak Mountains.

This mysterious bird is known from only two specimens, the type, collected in the Arfak Mountains in 1876, and another bird, a female, collected in southeastern New Guinea at Matsika (950 meters) in 1933. This latter specimen, which has been commented on by Mayr and Rand (1936, *Ornith. Monatsber.*, vol. 44, p. 44), is in the American Museum of Natural History, where I have examined it. Mayr has compared this specimen with the type in the Leiden Museum and found that the two birds agree in all particulars, except that the type was in fresh-molted plumage, whereas the Matsika specimen was worn. According to Mayr and Rand, *M. arfakiana* differs from the other species of *Melanocharis* only in the yellow color of the axillary tufts and the comparatively short tarsus.

In general coloration *M. arfakiana* is very similar to females and immatures of *M. nigra*, which *M. arfakiana* matches also in length of wing and tail. The best distinguishing character is the color of the axillary tufts, which is pale yellow in *M. arfakiana* and virtually



pure white in *M. nigra* even in immature specimens. Finsch, in his original description of *M. arfakiana* (1900, Notes Leyden Mus., vol. 22, p. 70), states that the axillary tufts are "pale lemon yellow." *Melanocharis longicauda* has the axillary tufts of virtually the same pale yellow color as are those of *M. arfakiana*, although not quite so bright, but it differs from the latter species in having a white outer web on the outer pair of tail feathers and a somewhat longer tail.

The Matsika specimen of *M. arfakiana* appears to be an immature bird; it has brownish, very worn, and rather loosely built feathers among the green ones on the upper parts, and the bill is pale brownish. I cannot see that the tarsus is shorter than in the other species of *Melanocharis*, as postulated by Mayr and Rand, who, however, give no measurements. I have taken the measurements of a number of females of *M. nigra* and *M. longicauda* and found that they had a tarsus length of 15–16 mm., compared with 16 mm. in the Matsika specimen of *M. arfakiana*.

I maintain *M. arfakiana* as a separate species on the evidence given above, and I am certain that this species is valid. The only alternative is that it represents an immature stage of *M. longicauda* (with shorter tail and lacking the white mark on the outer tail feathers), but this is hardly probable.

### *Melanocharis nigra*

This species is distributed in the lowlands of New Guinea, up to an altitude of about 1200 meters, and is remarkable in possessing three very strongly differentiated subspecies with clear-cut, sharply defined characters. This indicates that the species is of comparatively old age. Further evidence is the fact that in their distribution the three forms reflect the zoogeographical division of New Guinea, as especially studied by Stresemann (1936, Mitt. Zool. Mus. Berlin, vol. 21, pp. 179–186). The distribution corresponds with that of the three species forming the superspecies *Goëra cristata* (shown in map 13, p. 183). Stresemann gives a map also of the distribution of *Melanocharis nigra* (map 11, p. 182), but on this map unites *M. n. nigra* and *M. n. chloroptera* in one "group."

In addition to the three well-marked subspecies, the Waigeu population forms a slightly differentiated form.

### *Melanocharis nigra pallida* Stresemann and Paludan, 1932

TYPE LOCALITY: Waigeu Island.

This subspecies, which is restricted to Waigeu Island in the Western Papuan Islands, is very similar to *M. n. nigra*, but is paler, more gray-

ish, on the under parts, this character holding good in both sexes. I have examined a good series, including the type, in the American Museum of Natural History.

*Melanocharis nigra nigra* (Lesson), 1830

TYPE LOCALITY: Dorey (=Manokwari), western New Guinea.

In the adult male the outer edges of the wing coverts and remiges are bluish black, with a strong metallic gloss, of the same color as the upper parts.

This is the form of the Vogelkop Peninsula, ranging eastward to the head of Geelvink Bay and to Triton Bay. It occurs also on the islands Misol and Salawati in the Western Papuan Islands. There is no local variation; the birds from Misol and Salawati are identical with the mainland birds, as has been pointed out already by Junge (1939, *Nova Guinea*, new ser., vol. 3, p. 50).

*Melanocharis nigra chloroptera* Salvadori, 1876

TYPE LOCALITY: Aru Islands.

The males differ strikingly from those of the nominate form in having the edges of the wing coverts and remiges dull green, contrasting with the glossy bluish black upper parts. The females are virtually identical with those of *M. n. nigra*.

*Melanocharis n. chloroptera* inhabits the Aru Islands and the southern parts of New Guinea from the Mimika River to the Fly River. There has been some discussion about the geographical variation within this subspecies. Ogilvie-Grant (1915, *Ibis*, Jubilee Suppl., no. 2, p. 84) says that the type of *chloroptera*, which came from the Aru Islands, differs in no way from the birds inhabiting southern New Guinea, and Rothschild and Hartert (1913, *Novitates Zool.*, vol. 20, p. 511) likewise state that they cannot find any differences between specimens from the Aru Islands and those from southern New Guinea. Junge (1939, *Nova Guinea*, new ser., vol. 3, p. 50), on the basis of an examination of the material in the Leiden Museum, states, however, that the males from the Aru Islands perhaps have a slightly longer tail. He gives the tail length of six males from the Aru Islands as 42-46 mm., and that of seven males from the mainland of New Guinea as 39-45 mm. Rand (1942, *Bull. Amer. Mus. Nat. Hist.*, vol. 79, p. 365) gives the corresponding measurements, based on the material in the American Museum of Natural History, as 44, 44, 45 mm. for Aru Island males, 42-45 mm. for mainland males, and concludes that there are no significant differences. I have measured the series in the British Mu-

seum, of which three adult males from the Aru Islands have tail lengths of 44, 45, 45 mm., 20 adult males from southern New Guinea, of 39–45 (average, 41.6) mm. The measurements taken by Junge, Rand, and myself give the same results, namely, that the Aru birds have on an average a slightly longer tail, but that the difference is much too small to justify any separation of subspecies.

*Melanocharis nigra unicolor* Salvadori, 1878

TYPE LOCALITY: Jobi (=Japen) Island.

The males differ strikingly from those of the other forms in having not only the upper parts and the edges of the remiges and wing coverts glossy bluish black, but also the entire under parts, which in the other subspecies are slaty gray with an olive tinge. The females have the under parts more grayish, not so olivaceous, as in the other forms.

This characteristic subspecies is found on Japen and Meos Num Island in Geelvink Bay and in the entire northern part of New Guinea east of this bay, and, in addition, in the southeastern peninsula. There is no geographical variation in this extensive distributional area. Sharpe (1885, Catalogue of the birds in the British Museum, vol. 10, p. 81), following Salvadori (1881, Ornitologia della Papuasias e delle Molucchi, vol. 2, p. 283), distinguished between *M. unicolor* from the said islands in the Geelvink Bay and *M. bicolor* Ramsay, 1879, from the mainland of New Guinea. The latter was stated to differ in having a whitish spot on the inner web of the outermost tail feather and a whitish base on the lateral under tail coverts. Still in 1923 Stresemann (1923, Arch. Naturgesch., vol. 89, div. A, no. 7, p. 67) maintained this distinction, but subsequently he and Paludan (1932, Novitates Zool., vol. 38, p. 224) showed that birds from Japen were identical with the mainland birds and possessed the same whitish tail markings. I have examined the extensive material in the American Museum of Natural History and found that the males of Japen and those from the mainland populations are completely identical. *Melanocharis bicolor*, therefore, becomes a synonym of *M. unicolor*.

Rand (1942, Bull. Amer. Mus. Nat. Hist., vol. 79, p. 511) has described a distinct altitudinal variation in this form. Males collected at Hollandia, near sea level, had a wing length of 58–63 mm., while those from the northern slope of the Snow Mountains, at an altitude of 1200 meters, measured 64–66 mm. The population inhabiting the slope at 850 meters was intermediate, the males having a wing length of 61–65 mm., which demonstrates that the variation is clinal. In the females the variation is less pronounced.

*Melanocharis longicauda*

While *M. nigra* has developed very distinct geographical forms, as described above, *M. longicauda*, which is a close relative, has only a slight, mostly clinal variation, indicating that it is of more recent origin. In its general coloration it resembles strikingly the nominate form of *M. nigra*. It is distributed in the lower parts of the mountains all over New Guinea, from about 1000 meters to 1800 meters, in the forests. It is possible to recognize five subspecies.

*Melanocharis longicauda longicauda* Salvadori, 1876

TYPE LOCALITY: Arfak Mountains.

The nominate form is distributed in the mountains of the Vogelkop Peninsula (Arfak, Tamrau) and Mt. Wondiwoi, Wandammen Mountains. A series in the American Museum of Natural History has been examined.

*Melanocharis longicauda chloris* Stresemann and Paludan, 1934

TYPE LOCALITY: Weyland Mountains.

Very similar to the nominate form, but adult males have a stronger yellow tinge on the under parts and on the axillary tufts. This slightly differentiated form is found in the Weyland Mountains. I have examined Stresemann's and Paludan's original series, including the type.

Junge (1939, Nova Guinea, new. ser., vol. 3, p. 49) referred a single male collected on the southern slope of the Oranje Mountains to this subspecies.

*Melanocharis longicauda umbrosa* Rand, 1941

TYPE LOCALITY: Idenburg River, northeastern New Guinea.

The males differ from those of *longicauda* and *chloris* in having distinctly darker, more olive-gray, under parts. The females (only one examined) and immature males are practically indistinguishable from those of the two preceding subspecies.

The type locality is the Idenburg River at 1200 meters in northern New Guinea, and *M. l. umbrosa* is not known with certainty from anywhere else. Probably it has a wider distribution on the northern slope of the Snow Mountains, but it is not possible to say how far eastward it ranges. *Melanocharis longicauda* is unknown from the Sepik Range.

*Melanocharis longicauda orientalis* Mayr, 1931

TYPE LOCALITY: Aroa River, southeastern New Guinea.

The adult males are very similar to those of *M. l. longicauda* in



general coloration, but differ distinctly in having a well-defined whitish spot on the inner web of the outermost tail feather situated about 10 mm. from the tip (cf. fig. 1), while in the other above-mentioned forms the inner web of this feather is uniform blackish in the adult males. The females of all races have usually an indication of a whitish spot, more or less obscure, on the inner web of the outermost tail feather, although in some specimens it is missing.

This subspecies, which is more well marked than those previously mentioned, is distributed in the mountains of southeastern New Guinea. Large series in the American Museum have been examined.

*Melanocharis longicauda captata* Mayr, 1931

TYPE LOCALITY: Junzaing, Huon Peninsula.

This form differs from *orientalis* in having the white spot on the inner web of the outermost tail feather very much extended, forming a broad bar across the feather, about 10 mm. in width, reaching the shaft and being confluent with the white edge on the outer web. The white edge on the outer web is distinctly broader than in *orientalis*.



FIG. 1. Outermost right tail feather in males of various forms of *Melanocharis longicauda*. A. *M. l. longicauda*. B. *M. l. orientalis*. C. *M. l. captata* (type specimen). All  $\times 1$ .

The differences in tail pattern are shown in figure 1. In addition, the under parts of the body are slightly more olive yellowish, not so grayish, as in *orientalis*. These differences hold good for both sexes. In adult males the upper parts are distinctly more glossy bluish, while *orientalis* is more dull greenish blue.

This distinct form was described from the Saruwaged Mountains in the Huon Peninsula. I have examined Mayr's original series from

Junzaing (two adult males, seven adult females, three juvenile males), including the type, which is in the Berlin Museum. The population of the Herzog Mountains belongs to this form, according to Greenway (1935, Proc. New England Zool. Club, vol. 14, p. 104), who states, however, that the specimens from this area show a tendency towards *orientalis*, having the white bar on the outer tail feather not quite so broad as in topotypical *captata*. Likewise, Gyldenstolpe (1955, Arkiv Zool., ser. 2, vol. 8, no. 1, p. 171) mentions that a male from Wau in the Herzog Mountains is not so steel-blue above as specimens of *captata* from Nondugl in the Central Highlands. Birds from this latter area were assigned to *umbrosa* by Mayr and Gilliard (1954, Bull. Amer. Mus. Nat. Hist., vol. 103, p. 371) as well as by Gyldenstolpe (*loc. cit.*), but actually they belong to *captata*. I have examined both Mayr and Gilliard's material (two females in the American Museum of Natural History) and Gyldenstolpe's material (one adult male, two adult females, one juvenile male in Naturhistoriska Riksmuseet, Stockholm), all specimens having been collected at Nondugl, Wahgi Valley, Central Highlands, at an altitude of approximately 1600 meters. The white tail pattern, as well as the gloss of the upper parts in the males, is exactly as in topotypical *captata*, with which these birds have been compared, while the color of the under parts comes very close to that of *orientalis*, being more grayish, not so yellowish, as in *captata*. The differences from *captata* are so slight, however, that it is natural to include this population in *captata*, and it is quite out of the question to separate the birds from the Central Highlands as another subspecies. Gyldenstolpe (*loc. cit.*) gives good descriptions of the Nondugl birds, stressing the "broad and well-defined white subterminal band" on the outer tail feather, which is a *captata* character. He states, further, that "the under-parts of the body are less tinged with yellowish, being markedly more greenish" than in *captata*.

The differences between topotypical *captata* and the population of the Central Highlands and that of the Herzog Mountains, respectively, demonstrate that the two latter populations approach *orientalis* in their characters, indicating that the distinct forms *orientalis* and *captata* intergrade, their characters probably forming a cline.

#### *Melanocharis versteri*

This species is closely related to the above-mentioned species, but has a long, fan-shaped tail, prolonged upper tail coverts, and an extensive white basal area on the tail feathers. Obviously, *M. versteri* constitutes a higher evolutionary stage. The sexual dimorphism, including that in size, is considerable; the females are much larger than

the males, and there is virtually no overlap in the measurements of the two sexes.

*Melanocharis versteri* is distributed in the mountains of New Guinea, at higher altitudes than the preceding species, from 1400 meters up to 3600 meters, although it is uncommon above 3000 meters. The geographical variation is not particularly pronounced and mainly concerns the color of the under parts and the extension of the white patch on the rectrices. The birds in the Vogelkop Peninsula are rather pale, while those of the Snow Mountains are dark. Farther east the birds become gradually paler again, reaching the lightest extreme in the southeastern peninsula. The main reviews of the geographical variation have been given by Rothschild and Hartert (1911, Bull. Brit. Ornith. Club, vol. 29, p. 36) and Stresemann (1923, Arch. Naturgesch., vol. 89, div. A, no. 7, p. 68).

The name of this species is by some students given as *versteri* Finsch (1876, Proc. Zool. Soc. London, for 1875, p. 641) and by others as *versterii* Salvadori [1876, Ann. Mus. Civ. Genova, vol. 7 (1875), p. 940]. Apart from the trivial difference in the way of spelling there is the question of the correct quotation of the author's name. I am not quite sure which of the two authors has priority, but I think it is Finsch, whose description was published April 1, 1876. More important, in my opinion, is the fact that Finsch was the actual describer, while Salvadori in his description states that Finsch had informed him (*in litt.*) that he had already described this species under the above name.

*Melanocharis versteri versteri* (Finsch), 1876

TYPE LOCALITY: Arfak Mountains.

This form is restricted to the Arfak Mountains in the Vogelkop Peninsula. The under side in the adult males is of a light gray color, and the white patch on the proximal parts of the tail feathers has an extension of 32–38 mm. A good series in the American Museum of Natural History has been examined.

*Melanocharis versteri meeki* (Rothschild and Hartert), 1911

TYPE LOCALITY: Mt. Goliath, Snow Mountains.

Differs from the nominate form in having distinctly darker slate-gray under parts in the adult males. The extension of the white area in the tail is just as in *M. v. versteri*. In the females the under parts are only slightly darker than in the nominate form. This form inhabits the Weyland Mountains and the Snow Mountains. Ample material from both areas has been examined by me in the American Museum of Natural History.

Rand (1942, Bull. Amer. Mus. Nat. Hist., vol. 79, p. 512) has described striking altitudinal variation in the Snow Mountains population, in which the wing length increases with altitude and, in addition, the males from high altitudes have slightly more white in the tail. According to the measurements given by Rand it appears to be possible to distinguish between two altitudinal subspecies. The wing lengths of four adult males collected in the comparatively low mountains forming the watershed between the Idenburg River and the Hablifoeri River, at an altitude of 1800–2150 meters, are 59–63 mm., while those of a series of males collected on the higher slopes of the Snow Mountains (at Lake Habbema and at the Bele River and Balim River) are, at 2200 meters, 64, 64, 66 mm., and, at 2800 meters, 68, 68, 69, 69 mm. The corresponding figures for the adult females are 65–69 mm. in the Idenburg River slope population (1800–2150 meters), and 70–74 mm. for the higher Snow Mountains population (2200–3225 meters). The wing lengths in the birds inhabiting the higher altitudes are greater than in any other population. The wing measurements of series collected in other areas are as follows: southern slopes of the Snow Mountains: seven males, 60–65 mm., five females, 69–71 mm. (Junge, 1939, Nova Guinea, new ser., vol. 3, p. 50); Wissel Lake area: three males, 62–64, seven females, 68–71 (Junge, 1953, Zool. Verhand., no. 20, p. 74); Weyland Mountains: 14 males, 60–66, 12 females, 67–70 (Stresemann and Paludan, 1936, Mitt. Zool. Mus. Berlin, vol. 21, p. 201); Central Highlands: six males, 61–65, 14 females, 63–70 (Gyldenstolpe, 1955, Arkiv Zool., ser., 2, vol. 8, no. 1, p. 171); southeastern peninsula: 15 males, 61–66, 15 females, 66–72 (Mayr and Rand, 1937, Bull. Amer. Mus. Nat. Hist., vol. 73, p. 238). It is noteworthy that, although this species in other parts of New Guinea ascends to altitudes as high as those in which it is found in the central Snow Mountains, it nowhere attains such large proportions as in the latter area. In this respect it is reminiscent of such species as *Rhipidura albolimbata*, *Dicaeum pectoralis (geelvinkianum)*, and *Paramythia montium*, which in the highest parts of the Snow Mountains have developed forms with large body size. Still, the measurements given above demonstrate that in *Melanocharis versteri* there is a considerable overlap in the wing length of the two alleged subspecies, when all populations are compared, and I agree with Rand (*loc. cit.*) that it seems impractical to separate altitudinal races.

*Melanocharis versteri virago* (Stresemann), 1923

TYPE LOCALITY: Schraderberg, Sepik Mountains.

This is an ill-defined transitional form between *meeki* and *maculi-*



*ceps*, being nearer the latter. It differs from *meeki* in having in adult males paler gray under parts and a much more extensive white basal patch on the tail feathers, this patch measuring 41–49 mm. in length. The females have more grayish brown, less yellowish, under parts than those of *meeki*. From *maculiceps* it differs only in having darker slate-gray under parts in the adult males. In addition, this form differs from both *meeki* and *maculiceps* in having slightly smaller measurements; the wing length is 58–61 mm. in males and 64–68 mm. in females, which should be compared with the measurements of various populations of *meeki* and *maculiceps* given above (p. 12).

Under the name *M. v. virago* I unite the populations of the Cyclops Mountains, the Sepik Mountains, the mountains of the Huon Peninsula, and the Central Highlands. These populations are not identical, however, but in coloration constitute various steps of intergradation between *meeki* and *maculiceps*.

I have examined a series of birds from the Cyclops Mountains collected by Ernst Mayr (in the American Museum of Natural History). They are remarkably dark, much darker than *M. v. versteri*, and, further, have less white in the tail than topotypical *virago*. On the other hand, they are not so dark as *meeki* and cannot be included in that form. It is difficult, however, to name these birds, as they show transition to the subspecies *versteri*, *meeki*, and *virago*. The Cyclops Mountains are situated east of the area inhabited by *versteri*, west of that inhabited by *virago*, and north of that inhabited by *meeki*, and is isolated from them all. The transitional status of the Cyclops Mountains population is demonstrated by the fact that it has been included in the nominate form by Hartert (1930, *Novitates Zool.*, vol. 36, p. 52) and by Stresemann and Paludan (1936, *Mitt. Zool. Mus. Berlin*, vol. 21, p. 201), while Mayr (1941, *List of New Guinea birds*, p. 215) placed it with *virago*, and more recently he and Gilliard (1954, *Bull. Amer. Mus. Nat. Hist.*, vol. 103, p. 371) emphasized its distinctness from both *M. v. versteri* and *M. v. virago* and assumed that it "may have to be separated after more topotypical material of *virago* becomes available."

The Sepik Mountains (Schraderberg) form the type locality of *virago*. Stresemann, in his original description (1923, *Arch. Naturgesch.*, vol. 89, div. A, no. 7, p. 68), gives as the only difference from *albescens* (= *maculiceps*) the fact that *virago* is smaller. Subsequently he apparently changed his mind and considered *virago* as not separable from *maculiceps*, because in a letter to Gyldenstolpe (1955, *Arkiv Zool.*, ser. 2, vol. 8, no. 1, p. 172) he wrote that he regarded *virago* and *maculiceps* as synonyms. I have examined Stresemann's original series (three males

and four females in the Zoological Museum, Berlin), including the type from the Schraderberg, and find that the males differ distinctly from those of *maculiceps* in having darker slate-gray under parts, which are even slightly darker than those in nominate *versteri*. The white patch in the tail measures, in the three males of the type series, 40, 41, and 45 mm., respectively, which is just as in *maculiceps*. The wing length is 58, 59, 59 mm. The females are practically indistinguishable from those of *maculiceps*.

I have examined a series collected by Beck in the Saruwaged Mountains in the Huon Peninsula (in the American Museum of Natural History). These birds are very similar to toprototypical *virago* both in coloration and in proportions; the wing in the adult males measures 58–61 mm. Mayr (1931, Mitt. Zool. Mus. Berlin, vol. 17, p. 669) has discussed the population of the Saruwaged Mountains and states that it is similar to *maculiceps*, but that the adult males perhaps are somewhat darker on the under parts.

The specimens from the Central Highlands bridge the differences between toprototypical *virago* and *maculiceps*. The adult males are paler on the under parts than *virago*, matching those of nominate *versteri* or being slightly paler, and have slightly larger proportions than *virago*, being similar to *maculiceps* in this respect. The wing measurements are given above (p. 12). I have examined the large series collected in the Central Highlands by Gilliard in 1950 and 1952 (in the American Museum of Natural History) and by Gyldenstolpe in 1951 (in Naturhistoriska Riksmuseet, Stockholm) and am convinced that for practical reasons it is best to place these birds with *virago*, because in their characters they appear to be nearer *virago* than to typical *maculiceps*.

*Melanocharis versteri maculiceps* (De Vis), 1898

TYPE LOCALITY: Wharton Range, southeastern New Guinea.

This form has still lighter, more whitish gray, under parts in the adult males than *virago* and nominate *versteri*, constituting the pale extremes in this species. The white basal tail patch is large, matching that in *virago*. The females are similar to those of *virago*, but perhaps on an average are slightly paler grayish on the under side.

This is the form of the mountains of the southeastern peninsula and of the Herzog Mountains and appears in its entire range to be uniform in color and proportions, contrary to the variable *virago*. Rothschild and Hartert (1911, Bull. Brit. Ornith. Club, vol. 29, p. 36) described this form and correctly pointed out its characters but, when naming it *albescens*, overlooked the fact that the population of the southeast-

ern peninsula had already received the name *Sarganura maculiceps* by De Vis (1898, Ann. Rept. Brit. New Guinea, for 1896-1897, app. AA, p. 87), with the Wharton Range as the type locality.

*Melanocharis striativentris*

This species is distributed in the mountains of New Guinea, ranging from 1200 meters to about 2200 meters in altitude. It is absent from the mountains of the Vogelkop Peninsula. It is not well represented in museums and appears to be rare everywhere in its range, although Gyldenstolpe (1955, Arkiv Zool., ser. 2, vol. 8, no. 1, p. 173) collected a rather large series at Nondugl, Central Highlands, and states that it is quite abundant there.

While the other species of *Melanocharis* are characterized by a strong sexual dimorphism, the males and females in this species are quite similar. The geographical variation has been discussed by Mayr (1931, Mitt. Zool. Mus. Berlin, vol. 17, p. 670), Stresemann and Paludan (1936, Mitt. Zool. Mus. Berlin, vol. 21, p. 201), and Mayr and Gilliard (1952, Amer. Mus. Novitates, no. 1577, pp. 6-7). The four acceptable subspecies are all quite distinct.

*Melanocharis striativentris axillaris* (Mayr), 1931

TYPE LOCALITY: Snow Mountains.

This form, which inhabits the Weyland Mountains and the southern slopes of the Snow Mountains (Nassau and Oranje ranges), differs distinctly from the other subspecies in having white axillaries and under wing coverts. The under parts are more heavily streaked than in the nominate form. The proportions match those of the nominate form; wing length of five males and females, 71-74 mm.

The description by Mayr (1931, Mitt. Zool. Mus. Berlin, vol. 17, p. 670) was based on a single female, collected by Meek at Utakwa River, Nassau Range in the Snow Mountains. Subsequently, Stein collected a series of this subspecies in the Weyland Mountains (cf. Stresemann and Paludan, 1936, Mitt. Zool. Mus. Berlin, vol. 21, p. 201), and Versteeg collected one specimen, a male, in the Treub Mountains, Oranje Range (Junge, 1939, Nova Guinea, new. ser., vol. 3, p. 51). I have examined the type specimen and the series from the Weyland Mountains, both of which are in the American Museum of Natural History.

*Melanocharis striativentris striativentris* Salvadori, 1894

TYPE LOCALITY: Moroka, Owen Stanley Mountains.

Differs from *axillaris* in having dark grayish brown axillaries and

under wing coverts, and under parts not so heavily streaked. Wing length: 69–75 mm.

This form inhabits the Central Highlands of New Guinea (Nondugl, Wahgi region) and the southern slope of the mountains in southeastern New Guinea. I have examined the type specimen (in the British Museum) and good material from the Central Highlands (in the American Museum of Natural History and in Naturhistoriska Riksmuseet, Stockholm) and from the southeastern peninsula (in the American Museum of Natural History).

*Melanocharis striativentris prasina* (De Vis), 1897

TYPE LOCALITY: Neneba, northern slope of Mt. Scratchley.

Similar to nominate *striativentris*, but differs markedly from this and all other subspecies in having the proximal quarter of the tail feathers white, contrasting with the olivaceous color of the remaining parts of the feathers. In the other subspecies the tail feathers are uniform olive brownish.

*Melanocharis s. prasina* inhabits the northern slope of the mountains in the southeastern peninsula and is isolated from the nominate form on the southern mountain slopes by the high ridges of the mountains. It is probably *prasina* also that inhabits the Herzog Mountains, where this species was collected by Mayr. I have examined a small series from the Owen Stanley Mountains in the American Museum of Natural History.

This form was recently described by Mayr and Gilliard (1952, Amer. Mus. Novitates, no. 1577, p. 6), who pointed out the differences from the other forms and named it *M. s. albicauda*, with type locality Bihagi, head of the Mambare River, Owen Stanley Mountains. They overlooked, however, the fact that this form had previously been described as *Neneba prasina* by De Vis (1897, Ibis, ser. 7, vol. 3, p. 384) with type locality Neneba, on the northern slope of Mt. Scratchley, at an altitude of about 1200 meters. The type specimen of *Neneba prasina* was collected on one of McGregor's expeditions, and in the itinerary the location of the hamlet Neneba is clearly described (1898, Ann. Rept. Brit. New Guinea, for 1896–1897, app. C, p. 10). It is situated at the small river Ajibara, a tributary of the Mambare River, apparently not many miles from Bihagi.

*Melanocharis striativentris chrysocome* Mayr, 1931

TYPE LOCALITY: Junzaing, Huon Peninsula.

This form differs from the three preceding races in the much darker



under parts, on which the pale olive-yellow streaks are almost absent. In addition, the proportions are larger; the wing measures 75–80 mm.

This distinct form is found in the Saruwaged Mountains, Huon Peninsula. I have examined a large series in the American Museum of Natural History, collected by Beck in 1928.

*RHAMPHOCHARIS SALVADORI*, 1876

This monotypic genus is closely related to *Melanocharis*, with which it has the following characters in common: large outer (tenth) primary, serrated edges of the bill, white marks on rectrices, comparatively long tail (of similar relative size as in *M. longicauda*), pale slate-colored under parts in male (of about the same shade as in *M. versteri*), and pronounced sexual dimorphism in color pattern as well as in size, the females being considerably larger than the males. *Rhamphocharis* differs from *Melanocharis* mainly in its much longer and more slender bill and in the color pattern of the plumage, especially that of the female.

*Rhamphocharis crassirostris*

This is a bird of the New Guinea mountain forests between 1200 and 2400 meters in altitude. The geographical variation is not particularly pronounced, but the two forms *crassirostris* and *piperata* can be readily distinguished. The third race (*viridescens*) accepted by Mayr (1941, List of New Guinea birds, p. 216) is very rare in collections, and I have not seen it.

*Rhamphocharis crassirostris crassirostris* Salvadori, 1876

TYPE LOCALITY: Hatam, Arfak Mountains.

This form from western New Guinea is small and short-billed and has the white base of the rectrices measuring at most 10 mm. It must be a rare bird because only a few specimens exist in collections. I have not seen specimens from the type locality (Arfak Mountains), but have examined a male from Mt. Goliath, Snow Mountains, which, according to Hartert (1913, Novitates Zool., vol. 20, p. 511), agrees with the type; it has a wing length of 68 mm. and a bill length (measured from the skull) of 16 mm. Junge (1939, Nova Guinea, new ser., vol. 3, p. 51) mentions a specimen (male) from Treub Bivak (2365 meters) in the Oranje Range of the Snow Mountains, with the extension of white in the tail feathers similar to that in the specimen from Mt. Goliath and with the wing measuring 72 mm. Mayr and De Schauensee (1939, Proc. Acad. Nat. Sci. Philadelphia, vol. 91, p. 238) have examined a

specimen from the northern part of the Vogelkop Peninsula which they state to be similar to the specimen from Mt. Goliath.

*Rhamphocharis crassirostris piperata* (De Vis), 1898

TYPE LOCALITY: Suku, Vanapa Valley, southeastern New Guinea.

Differs from the nominate form in being slightly larger (wing length in males, 71–74 mm.) and having a much longer bill (bill length in males, 20–21 mm.) and, further, in having the white base of the rectrices of greater extension, measuring more than 20 mm.

This form is distributed in the mountains of southeastern New Guinea. Recently two specimens (one adult male and one immature male) were collected by Gilliard in the Kubor Mountains, Central Highlands. I have examined these specimens (in the American Museum of Natural History) and agree with Mayr and Gilliard (1954, Bull. Amer. Mus. Nat. Hist., vol. 103, p. 371) that they belong to this subspecies. I have also examined one male and one female in Naturhistoriska Riksmuseet, Stockholm, recently collected in the same area by Gyldenstolpe, and, finally, I have seen a small series from the southeastern peninsula in the British Museum and in the American Museum of Natural History.

*Rhamphocharis crassirostris viridescens* Mayr, 1931

TYPE LOCALITY: Dawong, Herzog Mountains.

The description of this form, which inhabits the Herzog Mountains, is based on only one specimen, a female, which is kept in the Zoological Museum in Berlin and was not examined by me. It is said to be darker than the other forms and have smaller white spots. The male of this form has not been described, but there are three males in the Museum of Comparative Zoölogy in Cambridge, collected by Stevens on Mt. Misim (Greenway, 1935, Proc. New England Zool. Club, vol. 14, p. 104). These males have not yet been compared with those of the other races.

*PRIONOCHILUS* STRICKLAND, 1841

This genus contains six species, distributed in the Oriental region. Five of the species inhabit the so-called "Malaysian" subregion (peninsular Siam, the Malay States, Sumatra, Java, Borneo, Palawan), and one inhabits the Philippine subregion. All six species are lowland forest birds which nowhere ascend to altitudes higher than 1000–1200 meters.

The species within this genus are closely allied and form a natural

group. Farthest separated is *P. olivaceus*, which is somewhat more primitive than the other species. The sequence of the species given by Mayr and Amadon (1947, Amer. Mus. Novitates, no. 1360, pp. 14-16) is the most natural one and is followed here.

The name *Prionochilus* was in constant use for this genus from its erection in 1841 until about 1920, when many students began to use the name *Anaimos* Reichenbach, 1853, for instance, Chasen (1935, Bull. Raffles Mus., no. 11, p. 271), Mayr and Amadon (*loc. cit.*), and Delacour (1947, Birds of Malaysia, p. 303). The reason for the change of name was the assumption that *Prionochilus* Strickland, 1841, was pre-occupied by *Prionocheilus* Chevrolat, 1835 (*in* Dejean, Catalogue des coléoptères, ed. 2, p. 427). This name evidently constitutes only a different Latin rendering of the same Greek designation. However, according to the present rules these two names are not homonymous (cf. 1953, Copenhagen decisions on zoological nomenclature, p. 78, par. 152, and p. 80, par. 157). The supposed homonymy of *Prionochilus* and *Prionocheilus* was pointed out by Oberholser (1912, Smithsonian Misc. Coll., vol. 60, no. 7, p. 22) and again emphasized by him (1923, Ohio Jour. Sci., vol. 23, p. 290). The homonymy was disputed by Hartert (1920, Novitates Zool., vol. 27, p. 430, note) and, subsequently by McGregor (1927, Philippine Jour. Sci., vol. 32, p. 520), who upheld the use of *Prionochilus*, claiming that the names were easily distinguishable and should both be accepted, and adding that no nomenclatorial rule demanded the rejection of *Prionochilus* for the reasons given by Oberholser. Many other authors continued to use *Prionochilus*, such as Robinson and Kloss (1924, Jour. Nat. Hist. Soc. Siam, vol. 5, no. 3, p. 391), Stuart Baker (1926, Fauna of British India, birds, ed. 2, vol. 3, p. 437), Bartels and Stresemann (1929, Treubia, vol. 11, p. 143), Chasen and Kloss (1930, Bull. Raffles Mus., vol. 4, p. 111). Only in the very short period since about 1940 has *Anaimos* been predominantly used.

The question is whether *Prionochilus* or *Anaimos* should now be preferred. The fact that *Anaimos* is now well established speaks in favor of our using this name. However, if *Anaimos* should be preferred, an application to the International Commission on Zoological Nomenclature with a proposal to use its plenary powers to reject *Prionochilus* would be required. Such a step is not necessary, if *Prionochilus* is used as the generic name. Although changes of names should be avoided, as far as possible, I have, nevertheless, chosen to revert to *Prionochilus*. This name was continually in use for almost a hundred years and was the designation of the genus in by far the greater part of the literature on flowerpeckers. As it sank into oblivion only

about 20 years ago, no harm is done by reviving it now, and, as said above, no nomenclatorial steps are necessary in order to secure its future status.

For the sake of completeness it should be added that, according to Sherborn's "Index animalium" (p. 5149) *Prionocheilus* Chevrolat, 1835, was amended to *Prionochilus* by L. Agassiz, 1846, and there is also a *Prionochilus* Dallas, 1849, in Hemiptera. According to Neave (1940, Nomenclator Zool., vol. 3, p. 891), there are, further, *Prionocheilus* Rouault, 1846, in Trilobita, *Prionochelus* Desbrochers, 1875, in Coleoptera, and *Prionochilus* Bertoni, 1901, in Aves, but these names do not affect the priority of *Prionochilus* Strickland, 1841.

*Prionochilus olivaceus*

This is a rather primitive species without bright color patches and without a malar streak. The sexes are similar. It is restricted to the eastern islands of the Philippine Archipelago and is a comparatively rare species, inhabiting dense forests; only sparse material is available in museums. There are two distinct subspecies.

*Prionochilus olivaceus parsonsi* McGregor, 1927

TYPE LOCALITY: Malinao, Tayabas (=Quezon), Luzon.

Differs from the nominate form in having the lores and the sides of the throat and of the breast black, not slaty gray. I have seen no specimen of this rare form. It is restricted to the Sierra Madre, northeastern Luzon.

*Prionochilus olivaceus olivaceus* Tweeddale, 1877

TYPE LOCALITY: Dinagat.

This is the form of the southern Philippine Islands (Bohol, Samar, Leyte, Dinagat, Mindanao, and Basilan). I have examined a total of 21 specimens (in the American Museum of Natural History, Chicago Natural History Museum, and Zoological Museum, Copenhagen), representing the populations of all the said islands except Bohol. From the large island of Mindanao I have had material from the provinces of Zamboanga, Misamis Oriental, Bukidnon, and Agusan.

All specimens examined appear to be virtually identical, although the birds from Samar and Leyte are slightly darker, more brownish, not so ash gray, on the sides of the throat and breast. These birds were separated as *P. samarensis* by Steere (1890, List of birds and mammals collected by the Steere Expedition to the Philippines, p. 22) and were stated to differ from *P. olivaceus* "in having breast and sides of throat



ash-brown, nearly snuff-brown, instead of ashy olive." This form has been rejected by all subsequent authors, for instance by Ogilvie-Grant (1897, *Ibis*, p. 239), McGregor (1927, *Philippine Jour. Sci.*, vol. 32, p. 522), and Sharpe (1909, *Hand-list of birds*, vol. 5, p. 31). I have examined Steere's type and three other specimens from Samar and Leyte (in the British Museum) and found them to be slightly darker on the under parts, as is said above. The specimens are old and somewhat faded, however, and show considerable individual variation. It appears very unlikely that the birds of Samar and Leyte can be separated as another subspecies, but in order to settle this question more material is needed.

*Prionochilus maculatus*

This Malaysian species has a red patch on the crown, like a kinglet, and a white malar streak. These characters are found also in all the following species of *Prionochilus* (the white malar streak is missing in *P. xanthopygius*), only *P. olivaceus* differing in this respect. The sexes differ only slightly in coloration.

The geographical variation is slight and forms a cline from peninsular Siam over Malaya and Sumatra to Borneo. The species has been revised by Mayr (1938, *Bull. Raffles Mus.*, no. 14, pp. 42-43). I have examined the large and excellent collection in the British Museum as well as the series in the American Museum of Natural History.

*Prionochilus maculatus septentrionalis* Robinson and Kloss, 1921

TYPE LOCALITY: Tasan, peninsular Siam.

This form is characterized by its having a conspicuous grayish tinge on the front, lores, cheeks, ear coverts, and mustachial streak, and whitish upper throat and cold grass-green upper parts, which are not so bright olive-green as in the other races. In addition, the yellow color on the breast and abdomen is slightly brighter and more intense than in *oblitus*, but this difference is not constant.

This is the form of southernmost Tenasserim and peninsular Siam. Apparently, the type locality, Tasan, near Chumphon (=Chumphon) and Tapli at the Pakchan estuary form the northern limit of *P. maculatus* in Siam, while in Tenasserim this species is known as far north as Mergui (Hume and Davison, 1878, *Stray Feathers*, vol. 6, p. 199). From there the race *septentrionalis* ranges south almost to the boundary of the Malay States, probably merging with the southern form, *P. m. oblitus*, in the district of Pattani. Robinson and Kloss (1924, *Jour. Nat. Hist. Soc. Siam*, vol. 5, no. 3, p. 392) believe that the birds

from Pattani belong to *oblitus* (which they call *maculatus*), as the more western birds, from Perlis and Kedah, are typical *oblitus*. Riley (1938, Bull. U. S. Natl. Mus., vol. 172, p. 520), on the other hand, states that his three specimens from Bangnara (=Narathiwat) in Pattani do not materially differ from those collected at Trang, which evidently belong to *septentrionalis*.

I have examined large series of this form in the British Museum, including the type. The specimens from Chumporn (=Chumphon), Tapli, Kao Nong (in Bandon), Tung Song, and Trang, all situated in peninsular Siam, are typical *septentrionalis*. This holds good also of some of the specimens from the Pakchan estuary in southern Tenasserim, while other specimens from this area (from Bankasoon and Malewoon) approach *oblitus* in various respects, which is strange in view of their northern origin.<sup>1</sup>

*Prionochilus maculatus oblitus* Mayr, 1938

TYPE LOCALITY: Selangor-Pahang border, Malay States.

This form, inhabiting the Malay States, forms the transition between *septentrionalis* and *maculatus*. It differs from *septentrionalis* in having a distinctly more greenish tinge on the front and sides of the face, brighter olive-green upper parts, often (but not always) a pale yellow tinge on the upper throat, and in some specimens paler yellow under parts. The differences between *oblitus* and its two neighboring forms (*septentrionalis* and nominate *maculatus*) are not particularly sharp. As said above, some specimens from as far north as Pakchan approach *oblitus* in their characters, while, on the other hand, some few specimens of *oblitus* from Selangor and Malacca come fairly near *maculatus*. Still, I find *oblitus* worthy of recognition, admitting that it is a somewhat vaguely defined intermediate form.

I have examined large series from Selangor, Perak, Kedah, Pahang, Gunong Tahan, and Malacca in the British Museum and the American Museum of Natural History.

*Prionochilus maculatus maculatus* (Temminck and Laugier), 1836

TYPE LOCALITY: Borneo.

Differs from the two preceding forms in having the upper and under parts more suffused with yellow. The upper throat is yellow, of the same shade as the breast and the remaining under parts; the sides of head and the entire upper parts are bright citrine greenish; the longi-

<sup>1</sup> It is well known also in respect to other species that the Malaysian influence can be traced farther to the north in the western (Tenasserim) side of the Malay Peninsula than in the eastern (Siamese) one.

tudinal streaks on the sides of the breast and on the flanks are darker and more olive greenish; the ground color of the breast and abdomen is a more intense yellow than in *oblitus* and *septentrionalis*. This is a distinct, easily recognizable form. It is distributed on Sumatra, Nias, Billiton, and Borneo.

The population of Nias has been separated as *P. m. opistatus* by Oberholser (1912, Smithsonian Misc. Coll., vol. 60, no. 7, p. 22), who described it as being smaller than *maculatus*. I have examined only one specimen from Nias (a male, in the American Museum of Natural History), and it did not appear to be smaller than nominate *maculatus*. It had a wing length of 52 mm., while a series from Borneo, measured by me, had wing lengths of 50–54 mm. De Schauensee and Ripley (1939, Proc. Acad. Nat. Sci. Philadelphia, vol. 91, p. 411) have examined a female from Nias Island with a wing length of 45.5 mm., which, to be sure, is a small measurement, even for a female. Ripley (1944, Bull. Mus. Comp. Zööl., vol. 94, p. 413) has examined the type and another male from Nias Island and states that there is no difference in size between these birds and *maculatus*. The type was, however, slightly darker than a Sumatra bird, while the other male was completely inseparable from *maculatus* in color. It seems better, therefore, to regard *opistatus* as a synonym of *maculatus*.

*Prionochilus maculatus natunensis* (Chasen), 1935

TYPE LOCALITY: Great Natuna Islands.

Very similar to nominate *maculatus*, but the under parts are slightly brighter yellow. This form was accepted by Mayr (1938, Bull. Raffles Mus., no. 14, p. 43), although with hesitation, and, having examined the type (a female, in the British Museum) and two adult males (in the American Museum of Natural History), I follow him in recognizing this slightly differentiated form. It is restricted to the Great Natuna Islands. Its distribution is usually given as North Natuna Islands, but this is not correct. There are three groups of islands in the Natuna Archipelago, namely, the South Natuna Islands, the Great Natuna Islands, and the North Natuna Islands, of which the last-named are a group of small islands widely removed from the Great Natuna Islands. *Prionochilus m. natunensis* is known only from Bunguran Island (=Great Natuna Island) in the Great Natuna Islands.

*Prionochilus percussus*

This species is closely allied to the following two species. All three species display a pronounced sexual dimorphism. The males are brightly colored and are adorned with brilliant red patches, while the

females are much more modestly colored. *Prionochilus percussus* has three distinct subspecies.

*Prionochilus percussus ignicapilla* (Eyton), 1839

TYPE LOCALITY: Malaya.

Sharpe (1884, Proc. Zool. Soc. London, for 1883, p. 580) was the first to point out the differences between this form and nominate *percussus* from Java, with which it had hitherto been confused. Having compared Temminck and Laugier's type of *percussus* in the Leiden Museum with specimens from Malaya, Sumatra, and Borneo, Sharpe stated that "the Javan bird has the throat white, whereas the specimens from the other above-named localities have a yellow throat and must bear the name of *P. ignicapillus* (Eyton)." This is quite correct if "chin" be substituted for "throat." Subsequently, Sharpe (1885, Catalogue of the birds in the British Museum, vol. 10, p. 65) found other distinctions, enumerating a number of differences between the two forms, of which not all, however, hold good. So far as I know, no more recent comparison has been made.

I have compared a fine series of *percussus* from Java (five adult males, four adult females, all fresh-molted) from the Rijksmuseum, Leiden, with the long series of *ignicapilla* from Malaya in the British Museum and find that *percussus* differs from *ignicapilla* in having the chin white, not yellow, the white malar streak much broader, the under parts darker and deeper yellow, almost orange, and the red patch on the center of the breast distinctly broader and larger. These differences are true of adult males only; females of the two subspecies, as well as young birds, are very similar.

This widespread subspecies ranges north through the Malay States and southern Siam, just crossing the boundary to Tenasserim, where it is known only from Bankasoon at the Pakchan estuary (Hume and Davison, 1878, Stray Feathers, vol. 6, p. 196). The northernmost locality from which it has been recorded is Chumporn (=Chumphon) in peninsular Siam (Robinson and Kloss, 1924, Jour. Nat. Hist. Soc. Siam, vol. 5, no. 3, p. 391). Farther south *P. p. ignicapilla* is found in the Rhio Archipelago, Sumatra, Billiton, Banka, Great Natuna Islands, and Borneo. It is highly interesting that in the last two areas it occurs side by side with the closely related *P. xanthopygius*. This latter species appears to be the more common one in Borneo, where *P. p. ignicapilla* is extremely rare, whereas on the Great Natuna Islands *P. xanthopygius* is the rarer species, only one specimen having been recorded from there. In Borneo Büttikofer (1900, Notes Leyden Mus., vol. 21, pp. 209-210) recorded *P. p. ignicapilla* from the Kapuas River,



but this record was unique for a long time and was often disputed, until in 1931 Chasen and Kloss (1932, Treubia, vol. 14, p. 17) rediscovered the species at Pontianak.

I agree with Ticehurst (1927, Jour. Bombay Nat. Hist. Soc., vol. 32, p. 356) that Eyton in naming this bird *Dicaeum ignicapilla* clearly intended the specific name to be a substantive, and this should therefore not be changed to *ignicapillus*, as is usually done.

*Prionochilus percussus regulus* (De Schauensee), 1940

TYPE LOCALITY: Tana Massa Island, Batu Islands.

I have not seen this form, which was described from Tana Massa Island, Batu Islands, off western Sumatra, and which is known only from the typical series. According to the description (De Schauensee, 1940, Proc. Acad. Nat. Sci. Philadelphia, vol. 92, p. 39) the male differs from that of *ignicapilla* by having paler upper parts, the red crown spot very much smaller, the under parts more greenish yellow, and the streak on the chest deep orange instead of scarlet. The female differs by having much duller under parts and the yellow spot on the center of the breast not brighter than the yellow on the center of the abdomen. The description is based on one adult male (the type), two adult females, and two juvenile females. Ripley (1944, Bull. Mus. Comp. Zoöl., vol. 94, p. 413) has examined the type and the two adult females and concludes that these specimens "are duller and paler and more washed out in their entire coloration" than *ignicapilla*. There is no difference in size. According to this statement *regulus* appears to be a very distinct form.

*Prionochilus percussus percussus* (Temminck and Laugier), 1826

TYPE LOCALITY: Java.

This form is restricted to Java. The differences from *P. p. ignicapilla* have been pointed out above.

*Prionochilus plateni*

This species, inhabiting Palawan and adjacent islands, differs in both sexes from *P. percussus* only in having a contrasting yellow rump, which is exactly the same character by which *Dicaeum trigonostigma xanthopygium* differs from allied races. *Prionochilus plateni* and *P. percussus* could be considered conspecific, were it not for the fact that the latter species lives side by side with *P. xanthopygius* which also has a yellow rump. *Prionochilus plateni*, on the other hand, cannot very well be regarded as conspecific with *P. xanthopygius*, because it has a white malar streak, similar to that in *P. percussus*, while this

streak is absent in *P. xanthopygius*. *Prionochilus plateni*, therefore, constitutes a perfect, clear-cut intermediate between the two other species. Consequently, it appears to be most appropriate to regard all three as separate species, as proposed by Mayr (*in* Delacour and Mayr, 1945, *Zoologica*, vol. 30, p. 115). Mayr also gives a convincing explanation of the evolutionary history of these three puzzling species.

*Prionochilus plateni plateni* Blasius, 1888

TYPE LOCALITY: Palawan.

This form, which is restricted to the islands of Balabac and Palawan, has continually been called *P. johannae* Sharpe, 1888, although Blasius' name had over a month's priority. This usage was not caused by ignorance but was due to reluctance to accept the names that Blasius, anxious to be the first describer, had the audacity to publish in a local German newspaper. Blasius soon (1888, *Ibis*, ser. 5, vol. 6, p. 372) drew attention to the priority of his names, which more recently have been discussed by Hartert (1920, *Novitates Zool.*, vol. 27, p. 431) and Rand (1955, *Auk*, vol. 72, p. 212).

*Prionochilus plateni culionensis* (Rand), 1948

TYPE LOCALITY: Culion Island, Calamianes Islands.

Differs from *P. p. plateni* by having, in the adult male, the under parts and the rump deeper yellow, more orange, and the red patch on the center of the breast larger and more intensely colored. The female differs only in having the pectoral region deeper yellow. There is virtually no difference in size between the two forms.

This form is known only from Culion Island but is probably distributed throughout the Calamianes Islands. I have examined the type and Rand's entire material in the Chicago Natural History Museum and, in addition, a large series of both this form and of *P. p. plateni* in the Philippine National Museum in Manila (cf. Salomonsen, 1952, *Vidensk. Medd. Dansk Naturhist. For.*, vol. 114, p. 354).

*Prionochilus xanthopygius* Salvadori, 1868

TYPE LOCALITY: Sarawak, Borneo.

This species is confined to Borneo and the Great Natuna Islands. It appears to ascend the hills to higher altitudes than the other species in this genus, as it has been recorded in the Kelabit uplands in Borneo as high as 1200 meters, while the other species rarely go higher than 1000 meters.

*Prionochilus xanthopygius* appears to be rare in the Great Natuna

Islands. Hartert (1895, *Novitates Zool.*, vol. 2, p. 468) mentions one specimen from Bunguran, collected at an altitude of 300 meters, but the species has never again been found in the islands. I have examined Hartert's specimen (an adult male, in the American Museum of Natural History), which appears to match specimens from Borneo perfectly, although it may be slightly smaller. It has a wing length of 51 mm., while four adult males from Borneo measure 52–54 mm. Chasen and Kloss (1930, *Bull. Raffles Mus.*, no. 4, p. 111) give the wing length of 10 adult males from Borneo as 52–58 mm. More material from the Great Natuna Islands is needed in order to ascertain if this slight difference in size between the populations is constant.

*Prionochilus thoracicus* (Temminck and Laugier), 1836

TYPE LOCALITY: Borneo.

This is the most brightly colored species in the genus, with the most pronounced sexual dimorphism. It inhabits the Malay States (north to Perak and Kedah), Billiton Island, and Borneo. It appears to be rare in the Malay States, from whence only about a dozen records are known (Gibson-Hill, 1949, *Bull. Raffles Mus.*, no. 20, p. 244).

*Prionochilus thoracicus* has been recorded once from southern Cochin-China in Indo-China (Tirant, 1879, *Les oiseaux de la Basse-Cochin-chine*, p. 108). According to Jean Delacour (*in litt.* to me), Tirant was a very reliable author. *Prionochilus thoracicus* has probably disappeared there now owing to the heavy destruction of the forests in the extreme south of Cochin-China.

There is a skin in the American Museum of Natural History labeled Sumatra, but without any further data, and Delacour (1947, *Birds of Malaysia*, p. 303) includes Sumatra in the range of this species. However, Chasen (1937, *Treubia*, vol. 16, p. 230) expressly states that it has never been recorded from Sumatra. In order to settle the question I asked Dr. G. C. A. Junge at the Rijksmuseum, Leiden, for his opinion, and he kindly answered (*in litt.*): "*Prionochilus thoracicus* is not represented in our collections from Sumatra, nor do I know of any reference." The record from Sumatra must, then, undoubtedly be due to some mistake.

I have compared the series from Malaya with that from Borneo (and with one immature male from Billiton) in the British Museum, but could find no difference between them.

#### TYPE SPECIMENS EXAMINED

*Melanocharis nigra pallida* Stresemann and Paludan, 1932 = *M. n. pallida*. In the American Museum of Natural History.

*Melanocharis longicauda chloris* Stresemann and Paludan, 1934 = *M. l. chloris*. In the American Museum of Natural History.

*Melanocharis longicauda umbrosa* Rand, 1941 = *M. l. umbrosa*. In the American Museum of Natural History.

*Melanocharis longicauda orientalis* Mayr, 1931 = *M. l. orientalis*. In the American Museum of Natural History.

*Melanocharis longicauda captata* Mayr, 1931 = *M. l. captata*. In the Zoological Museum, Berlin.

*Pristorhamphus versteri meeki* Rothschild and Hartert, 1911 = *Melanocharis versteri meeki*. In the American Museum of Natural History.

*Pristorhamphus versteri virago* Stresemann, 1923 = *Melanocharis versteri virago*. In the Zoological Museum, Berlin.

*Pristorhamphus versteri albescens* Rothschild and Hartert, 1911 = *Melanocharis versteri maculiceps*. In the American Museum of Natural History. No type specimen was mentioned in the original description, but I have examined all the material on which Rothschild and Hartert based the description.

*Neneba striativentris axillaris* Mayr, 1931 = *Melanocharis striativentris axillaris*. In the American Museum of Natural History.

*Melanocharis striativentris* Salvadori, 1894 = *M. striativentris striativentris*. In the British Museum.

*Melanocharis striativentris albicauda* Mayr and Gilliard, 1952 = *M. s. prasina*. In the American Museum of Natural History.

*Prionochilus olivaceus* Tweeddale, 1877 = *P. olivaceus olivaceus*. In the British Museum.

*Prionochilus Samarensis* Steere, 1890 = *P. olivaceus olivaceus*. In the British Museum.

*Prionochilus maculatus septentrionalis* Robinson and Kloss, 1921 = *P. m. septentrionalis*. In the British Museum.

*Anaimos maculatus oblitus* Mayr, 1938 = *Prionochilus maculatus oblitus*. In the American Museum of Natural History.

*Charitociris maculata natunensis* Chasen, 1935 = *Prionochilus maculatus natunensis*. In the British Museum.

*Prionochilus Plateni* Blasius, 1888 = *P. plateni plateni*. In the American Museum of Natural History. There is also a specimen in the British Museum marked "type," but I select the specimen in the American Museum of Natural History as the type.

*Prionochilus johannae* Sharpe, 1888 = *P. plateni plateni*. In the British Museum and the American Museum of Natural History. As in the case of *Prionochilus plateni* Blasius, there is a specimen in both museums marked "type." It is obvious that Sharpe retained the type specimen in the British Museum, and consequently I select the specimen in the British Museum as the type. Hartert, in his list of types in the Tring Museum (1920, *Novitates Zool.*, vol. 27, pp. 430-431), mentioned the type or alleged type specimens of *Prionochilus plateni* and *P. johannae* which are now in the American Museum of Natural History.

*Anaimos plateni culionensis* Rand, 1948 = *Prionochilus plateni culionensis*. In the Chicago Natural History Museum.